STENT DELIVERY SYSTEM WITH NESTED STABILIZER AND METHOD OF LOADING AND USING SAME Application No. 10/616,267

Amendment dated September 2, 2010 Reply to Final Office Action of July 2, 2010

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-54. (Canceled)

55 (Currently Amended) A stabilizer having a stent-underlying portion adapted to be disposed within an interior space defined by an inner periphery of a stent, the stent-underlying portion having a distal end adapted to be positioned adjacent a distal end of the stent, a proximal end adapted to be positioned adjacent a proximal end of the stent, and a length extending from the portion distal end to the portion proximal end, the stabilizer comprising a non-inflatable inner core and one or more members for engaging the stent inner periphery along the stent-underlying portion. wherein the one or more members for engaging the stent inner periphery comprises one or more radial protuberances that protrude from the inner core and lie along the stent-underlying portion of the stabilizer, wherein the one or more radial protuberances comprise at least two sets of rings about the inner core, wherein each set of rings includes at least two rings, each of the at least two rings adjacently positioned, the rings in [[the]] a first set [[lie]] positioned along [[the]] a length of the stent-underlying portion extending from the portion portion's distal end to the portion portion's proximal end and [[are]] spaced in a first pattern, and the rings in [[the]] a second set [[lie]] positioned at either the distal end of the stent-underlying portion or the proximal end of the stent-underlying portion and [[are]] spaced in a second pattern that is different than the first pattern.

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56. (Previously Presented) The stabilizer of claim 55, wherein the one or more radial protuberances are axially distributed along the stent-underlying portion of the stabilizer along the length of the stent.

57 - 60. (Canceled)

- 61. (Previously Presented) The stabilizer of claim 55, wherein the plurality of radial protuberances are positioned peripherally about the stabilizer such that the stabilizer engages the inner periphery of the stent in a plurality of peripheral locations.
- 62. (Previously Presented) The stabilizer of claim 55, wherein the radial protuberances are adapted to frictionally engage the stent inner periphery.

63 - 64. (Canceled)

65. (Currently Amended) A stabilizer having a stent-underlying portion adapted to be disposed within an interior space defined by an inner periphery of a stent, the stent-underlying portion having a distal end adapted to be positioned adjacent a distal end of the stent, a proximal end adapted to be positioned adjacent a proximal end of the stent, and a length extending from the portion distal end to the portion proximal end, the stabilizer comprising a non-inflatable inner core and at least two sets of rings extending radially outwardly from the inner core for engaging the stent inner periphery along the length of the stent-underlying portion, wherein each set of rings includes at least two rings, each of the at least two rings adjacently positioned, the rings in [[the]] a first set [[lie]] positioned along [[the]] a length of the stent-underlying portion extending from the portion's distal end to the portion portion's proximal end and [[are]] spaced in a first pattern, and the rings in [[the]] a second set [[lie]] positioned at either the distal end of the stent-underlying portion or

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pattern that is different than the first pattern, and wherein the rings for engaging the stent inner periphery comprises an outer surface of the stabilizer adapted to frictionally engage the stent inner periphery without protruding though interstitial

openings in the stent inner periphery when the stent is disposed over the stabilizer in

a predeployed condition.

66. (Previously Presented) The stabilizer of claim 65, wherein the stabilizer

outer surface comprises a higher coefficient of static friction than both a coefficient

of static friction and a coefficient of dynamic friction of the sheath.

67. (Previously Presented) The stabilizer of claim 65, wherein the stabilizer

outer surface comprises a continuous member that extends from the distal end to the

proximal end of the stent in contact with the inner periphery of the stent.

68. (Previously Presented) The stabilizer of claim 65, wherein the stabilizer

comprises an inner core and the outer surface comprises a covering over the inner

core.

69. (Previously Presented) The stabilizer of claim 68, wherein the covering

comprises a coating on the inner core.

70. (Previously Presented) The stabilizer of claim 68, wherein the covering

comprises a sleeve affixed to the inner core.

71. (Previously Presented) The stabilizer of claim 68, wherein the stabilizer

comprises a plurality of discrete rings of the covering affixed to the inner core and a

plurality of uncovered portions of the inner core spaced between the rings.

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- 72. (Currently Amended) A stent delivery system comprising:
- a) a stent comprising a proximal end, a distal end, a length between the proximal end and the distal end, and an inner periphery that defines an interior space, the stent adapted to be a radially compressed and loaded within the delivery system for introduction into the body lumen and to be expanded for deployment within the body lumen:
- a sheath overlying the compressed stent during introduction of the stent within the body lumen;
- a stabilizer having a stent-underlying portion adapted to be disposed within the interior space of the stent, the stent-underlying portion having a distal end adapted to be positioned adjacent the distal end of the stent, a proximal end adapted to be positioned adjacent the proximal end of the stent, and a length extending from the portion distal end to the portion proximal end, the stabilizer comprising a noninflatable inner core and one or more members, each of the one or more members comprising one or more radial protuberances that protrude from the inner core. wherein the one or more radial protuberances comprise at least two sets of rings about the inner core that engage the stent inner periphery, wherein each set of rings includes at least two rings, each of the at least two rings adjacently positioned, the rings in [[the]] a first set [[lie]] positioned along [[the]] a length of the stentunderlying portion extending from the portion portion's distal end to the portion portion's proximal end and [[are]] spaced in a first pattern, and the rings in [[the]] a second set [[lie]] positioned at either the distal end of the stent-underlying portion or the proximal end of the stent-underlying portion and [[are]] spaced in a second pattern that is different than the first pattern.
- 73. (Previously Presented) The stent delivery system of claim 72, wherein the stabilizer is adapted to hold the stent in a desired position when the sheath is moved relative to the stent.

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74. (Previously Presented) The stent delivery system of claim 72 wherein the stabilizer is adapted to hold the stent in the desired position when the sheath is retracted to deploy the stent.

75. (Previously Presented) The stent delivery system of claim 72, wherein the

stabilizer is adapted to hold the stent in the desired position when the sheath is

advanced to recapture a partially-deployed stent.

76. (Previously Presented) The stent delivery system of claim 72, wherein the

one or more radial protuberances are axially distributed along the stent-underlying

portion from the distal end to the proximal end of the stent.

77. (Previously Presented) The stent delivery system of claim 76, wherein the

stent comprises a framework having one or more areas of open space and at least

one of the plurality of radial protuberances penetrates the open space.

78 - 80. (Canceled)

81. (Currently Amended) A stabilizer having a stent-underlying portion adapted to be disposed within an interior space defined by an inner periphery of a stent, the

stent-underlying portion having a distal end adapted to be positioned adjacent a

distal end of the stent, a proximal end adapted to be positioned adjacent a proximal

end of the stent, and a length extending from the portion distal end to the portion

proximal end, the stabilizer comprising a non-inflatable inner core and one or more

members for engaging the stent inner periphery, wherein the one or more members

for engaging the stent inner periphery comprises at least two sets of rings extending

radially outwardly from an outer surface of the stabilizer adapted to frictionally engage the stent inner periphery along the stent-underlying portion without

protruding though interstitial openings in the stent inner periphery, wherein each set

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of rings includes at least two rings, each of the at least two rings adjacently positioned, the rings in [[the]] a first set [[lie]] positioned along [[the]] a length of the stent-underlying portion extending from the portion portion's distal end to the portion portion's proximal end and [[are]] spaced in a first pattern, and the rings in [[the]] a second set [[lie]] positioned at either the distal end of the stent-underlying portion or the proximal end of the stent-underlying portion and [[are]] spaced in a second pattern that is different than the first pattern.

- 82. (Withdrawn) A method of manufacturing a stabilizer having a stent-underlying portion adapted to be disposed within an interior space defined by an inner periphery of a stent, the stabilizer comprising an inner core and one or more protuberances that protrude from the inner core for engaging the stent inner periphery, the method comprising forming each protuberance via the steps of:
- a) providing a radially protruding ring around an entire periphery of an axial portion of the inner core;
 - b) removing a peripheral section of the ring, leaving the protuberance.
- 83. (Withdrawn) The method of claim 82, wherein step (b) comprises removing more than half of the ring.
- 84. (Withdrawn) The method of claim 82, comprising forming the one or more protuberances in a pattern of a broken ring or broken helix about the inner core.
- 85. (Currently Amended) A stabilizer for deployment of a stent in a distal location inside a body lumen from a proximal access location outside the body, the stabilizer having a stent-underlying portion adapted to be disposed within an interior space defined by an inner periphery of the stent, the stent-underlying portion having a distal end adapted to be positioned adjacent a distal end of the stent, and a length

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extending from the portion proximal end to the portion distal end, the stabilizer comprising a non-inflatable inner core having a first diameter adapted to underlie the stent, a proximal shoulder not underlying the stent located adjacent the proximal end of the stent and having a second diameter, and at least one distal protuberance underlying the stent and protruding from the inner core for engaging the stent inner periphery without protruding through interstitial openings in the stent inner periphery when the stent is disposed over the stabilizer in a predeployed condition, wherein the at least one distal protuberance comprises at least two sets of rings about the inner core, wherein each set of rings includes at least two rings, each of the at least two rings adjacently positioned, the rings in [[the]] a first set [[lie]] positioned along [[the]] a length of the stent-underlying portion extending from the portion portion's distal end to the pertion portion's proximal end and [[are]] spaced in a first pattern, and the rings in [[the]] a second set [[lie]] positioned at either the distal end of the stent-underlying portion or the proximal end of the stent-underlying portion and [[are]] spaced in a second pattern that is different than the first pattern.

- 86. (Previously Presented) The stabilizer of claim 85 further comprising a plurality of intermediate protuberances distributed between the proximal shoulder and the distal protuberance.
- 87. (Currently Amended) A stent delivery system for deployment of a stent in a distal location inside a body lumen from a proximal access location outside the body, the system comprising:
- a) a stent comprising a proximal end, a distal end, and an inner
 periphery that defines an interior space, the stent adapted to be radially compressed
 and loaded within the delivery system for introduction into the body lumen and to be
 expanded for deployment within the body lumen;
- a sheath overlying the compressed stent during introduction of the stent within the body lumen;

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- c) a stabilizer having a stent-underlying portion adapted to be disposed within the interior space of the stent, the stent-underlying portion having a distal end adapted to be positioned adjacent the distal end of the stent, a proximal end adapted to be positioned adjacent a proximal end of the stent, and a length extending from the portion proximal end to the portion distal end, the stabilizer further comprising a non-inflatable inner core having a first diameter underlying the stent, a proximal shoulder not underlying the stent located adjacent the proximal end of the stent and extending to a proximal end of the stabilizer, and having a second diameter greater than the first diameter, and at least one member underlying the stent and protruding from the inner core and engaging the stent inner periphery without protruding through interstitial openings in the stent inner periphery, wherein the at least one member comprises at least two sets of rings about the inner core, wherein each set of rings includes at least two rings, each of the at least two rings adjacently positioned. the rings in [[the]] a first set [[lie]] positioned along [[the]] a length of the stentunderlying portion extending from the portion portion's distal end to the portion portion's proximal end and [[are]] spaced in a first pattern, and the rings in [[the]] a second set [[liel] positioned at either the distal end of the stent-underlying portion or the proximal end of the stent-underlying portion and [[are]] spaced in a second pattern that is different than the first pattern.
- 88. (Previously Presented) The stent delivery system of claim 87, wherein the stabilizer further comprises a plurality of intermediate protuberances distributed between the proximal shoulder and the distal protuberance.
- 89. (Withdrawn) A method of manufacturing a stabilizer having a stentunderlying portion adapted to be disposed within and interior space defined by an inner periphery of a stent, the stabilizer comprising an inner core and one or more protuberances that protrude from the inner core for engaging the stent inner periphery, the method comprising forming each protuberance via the steps of:

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a) compressing the stent;

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- b) inserting the compressed stent and the inner core inside and outer sheath; and
 - c) injection molding the one or more protuberances over the inner core.